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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,016	12/21/2004	Richard Schmidt	52201-0631	3200

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TIAJOLOFF & KELLY
CHRYSLER BUILDING, 37TH FLOOR
405 LEXINGTON AVENUE
NEW YORK, NY 10174

EXAMINER
DEHGHAN, QUEENIE S

ART UNIT	PAPER NUMBER
1741	

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10/26/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,016	SCHMIDT ET AL.	
	Examiner	Art Unit	
	QUEENIE DEHGHAN	1741	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-8,22-34 and 36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-8,22-34 and 36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 8, 22-27, 33-34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al. (4,162,908) in view of Ruppert et al. (5,788,730) and Meyer (4,990,740) or Kamp et al. (4,992,642). Regarding claims 23-27 and 36, Rau et al. disclose a method for glass preform using a plasma burner, the method comprising supplying a hydrogen-free media flow comprising $SiCl_4$ and oxygen to a multi-nozzle deposition burner and focusing the media flow into a plasma zone via a media nozzle, wherein the $SiCl_4$ is oxidized to form SiO_2 particles and depositing the SiO_2 particles on

a surface while being vitrified (col. 1 line 64 to col. 2 line 22, line 59, col. 4 lines 24-27, figures 1 and 2). Rau et al. disclose a multi-nozzle burner, but fail to disclose a media nozzle that tapers in the direction of the plasma zone. Ruppert teaches a multi-nozzle burner for deposition of glass starting materials on a surface, wherein one of the nozzles has a wall defining a passage that tapers in a tapered portion toward the direction of the reaction zone, the passage communicating with a nozzle opening. Although the burner nozzle is employed for a flame hydrolysis process, Ruppert teaches the tapered nozzle has the effect of focusing a gas stream toward the area of the reaction zone, stabilizing the gas stream, and preventing reaction in the area of the nozzle opening (col. 3 lines 50-67, figure). Ruppert uses the tapered passage for supplying a barrier gas, which surrounds a media flow. Ruppert teaches this allows for focusing of the media flow to a specific location with respect to the nozzle opening, such as a reaction zone that is located away from the nozzle opening. The use of a tapered nozzle would be applicable in a plasma vapor deposition process because reaction of the glass media occurs away from the burner nozzles in a reaction zone, such as the plasma zone. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have similarly adapted a tapered passage to the media nozzle of Rau, such that the media flow passes through the passage and through the nozzle opening, since it allows for the stabilization and focus of the media flow towards the plasma reaction zone and more efficient deposition of the SiO_2 particles.

4. Ruppert does not specify the length of the tapered portion of the nozzle or the nozzle opening size. However, tapered nozzles and nozzle openings of various sizes

are well known in the art, such as the tapered nozzle of Meyer or the tapered nozzle of Kamp. Meyer teaches a multi-nozzle burner wherein a media is directed towards a plasma zone through a passage and nozzle opening, the passage being tapered in the direction of the plasma zone and having a tapered portion length of at least 8mm (col. 7 lines 44-47, 50-51, figure 1). Kamp teaches a multi-nozzle burner wherein the nozzle has a nozzle opening of 5mm in diameter (figure 2, col. 4 lines 14-15). The length of the tapered portion is not specifically disclosed. However, as shown proportionally in figure 2, with a nozzle opening of 5mm, the tapered portion is at least 5mm. Although the nozzles of Meyer and Kamp are utilized for a different purpose, selecting the length of a tapered nozzle, for instance greater than 8mm and a nozzle opening (i.e. 5mm) would be choices that are well known in the art. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have reasonably expected the nozzle of Rau and Ruppert to have a tapered portion with a desired length of at least 8mm and an opening of about 5mm, for instance, as such length and size are known in the art while still providing the desired flow characteristics to the media delivered through the nozzle.

5. Regarding claims 8 and 33, Rau discloses a glass starting material that contains a fluorine-containing component (col. 2 lines 56-29).

6. Regarding claims 22 and 34, Rau teaches the multi-nozzle burner includes a plurality of additional nozzles (items 11 and 12) with cylindrical walls concentric with and surround the media nozzle and defining annular gaps between each other and the media nozzle (fig. 1 & 2, column 3 lines 56-59).

7. Claims 3-6 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al. in view of Ruppert et al. (5,788,730), and Meyer (4,990,740) or Kamp et al. (4,992,642), as applied to claim 1, in further view of Edahiro et al. (4,402,720). Regarding claims 3-4 and 28-29, Rau teaches media flow that is enveloped with oxygen working gas since it already well mixed in with the media flow (col. 3 lines 15-25, 53-64. Rau also teaches flowing oxygen from a first gas nozzle of the deposition burner (col. 3 lines 15-25). Although the oxygen from the first gas nozzle does envelope the media flow, Rau also mentions the working gas has been supplied through the media nozzle. Edahiro teaches a plasma burner comprising of multiple nozzles, wherein a glass starting material flows from a media nozzle and an oxygen-containing working gas flows from a first working gas nozzle such that the oxygen envelops the media flow. Also supplying the working gas separate to allow for the formation of Si-N bonds first before Si-O bonds in the case of depositing nitrogen doped silica particles (col. 6 lines 31-65, fig 3a). Although not specifically disclosed, it would be reasonable to expect that the first working gas nozzle of Edahiro functions as a diffuser since it disperse the oxygen containing working gas such that the glass starting material and working gas are combined to form the glass particles (col. 9 lines 40-44). Additionally, Ruppert teaches the first tube surrounding a tapered nozzle results in an expansion area, also known as the diffuser area, which allows for a flow of gas in turbulent manner (col. 6, lines 13-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to have adapted a first working gas nozzle for distributing a oxygen-containing working gas that envelops the glass starting material from the media nozzle in the process of

Rau because supplying oxygen working gas from a separate nozzle allows for the desired incorporation of dopants such as nitrogen in the silica glass, as taught by Edahiro. Also, it would have been obvious to one of ordinary skill in the art at the time of the invention to have also flowed the working gas in a turbulent manner from a nozzle that functions as a diffuser in order to ensure the oxidation reaction of the glass starting material, by the ample diffusion of the working gas into the glass starting material.

8. Regarding claims 5 and 30, Rau teaches the working gas flow is enveloped by at least one oxygen-containing separating gas flow exiting from an annular gap nozzle coaxially surrounding the working gas nozzle when exiting from the working gas nozzle (col. 3 lines 15-25, 60-64, col. 4 lines 11-15, figures 1 and 2).

9. Regarding claims 6 an 31, Rau discloses producing a plasma zone by a high-frequency excitation inside a burner tube (12) into which a mixture of media flow and working gas flow is introduced (col. 3 lines 15-25, 60-62).

10. Claims 7 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al. (4,162,908) in view of Ruppert et al. (5,788,730) and Meyer (4,990,740) or Kamp et al. (4,992,642), as applied to claim 1 above, in view of Gouskov et al. (6,535,240). Rau et al. disclose supplying a glass starting material such as $SiCl_4$, but uses oxygen as a carrier gas. Gouskov et al. teaches a plasma vapor deposition process using a glass starting material, such as $SiCl_4$ also, and a carrier gas, wherein the carrier gas can alternatively be oxygen or nitrogen (col. 6 lines 25-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized nitrogen gas as a carrier gas for the glass starting material as an alternative

carrier gas in the process of Rau because Gouskov has demonstrated that it is known in the art and it predictable achieves the result of successfully serving to deliver the glass starting material as oxygen does.

Response to Arguments

1. Applicant's arguments filed August 6, 2010 have been fully considered but they are not persuasive. Regarding Rau, the applicant argues the nozzle of Rau is not tapered. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

2. Regarding Ruppert, the applicant argues the process disclosed is an outside vapor deposition process and not a plasma vapor deposition process. The processes are different. However, like Rau, Ruppert teaches the focusing of the reaction zone to a point further from the burner nozzle opening. This is accomplished by the used of a tapered nozzle. Similarly, a plasma vapor deposition process requires a similar condition, wherein the reaction takes places at a point distant from the burner nozzle opening. The use of the tapered nozzle to deliver the media flow of Rau would be obvious in order provide for better focus of the media into the plasma zone, so reaction can take place.

3. Regarding Meyer, the applicant argues the tapered portion is not adjacent to the tip of the exit nozzle. The claim language requires the tapered portion is adjacent the

nozzle opening. In other words “near” the nozzle opening. The tapered portion of Meyer's nozzle appears to be near the nozzle opening, as oppose half way down the nozzle tube or the other end of the nozzle tube.

4. Regarding Kamp, the applicant argues the plasma is generated in the nozzle and not in a plasma zone outside the nozzle. The use of the nozzle of Kamp does differ from that of Rau and Ruppert. However, like Ruppert, Kamp teaches a tapered nozzle allows for the focusing the plasma to a point distant from the nozzle opening. In order to reach the distance of the workpiece, the tapered nozzle of disclosed size is utilized to bridge the gap between the nozzle and the workpiece (col. 1 last paragraph). Therefore, it would be applicable to look to Kamp to suggest a size for the tapered nozzle for the focusing of the media flow of Rau to the plasma zone, which is located a distance from the nozzle opening.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUEENIE DEHGHAN whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Daniels can be reached on 571-272-2450. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Queenie Dehghan/

Examiner, Art Unit 1791